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(72) Inventor(s) Paolo Niccolai	(58) Field of Search UK CL (Edition T) G3N NGBXA NGBXC NGF1 NGF1B, G3R RBD32 , G4Q QAF QAJ QCE QCK INT CL ⁷ G05D 1/03 , G08G 1/0967 1/0968 Online: EPODOC, JAPIO, WPI
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(54) Abstract Title
An automatic vehicle control system

(57) An automatic vehicle control system comprises information encoded into the road surface (eg. on inserted plates or reflective tapes). A vehicle for use with the system comprises sensors configured to read the said encoded information. The said information would appear to be compared with pre-stored information held in a controller. Said controller is further configured to control the vehicle (eg. steering and speed). Provision is made for the driver to manually override the automatic control. Further disclosed is an obstacle detection sensor.

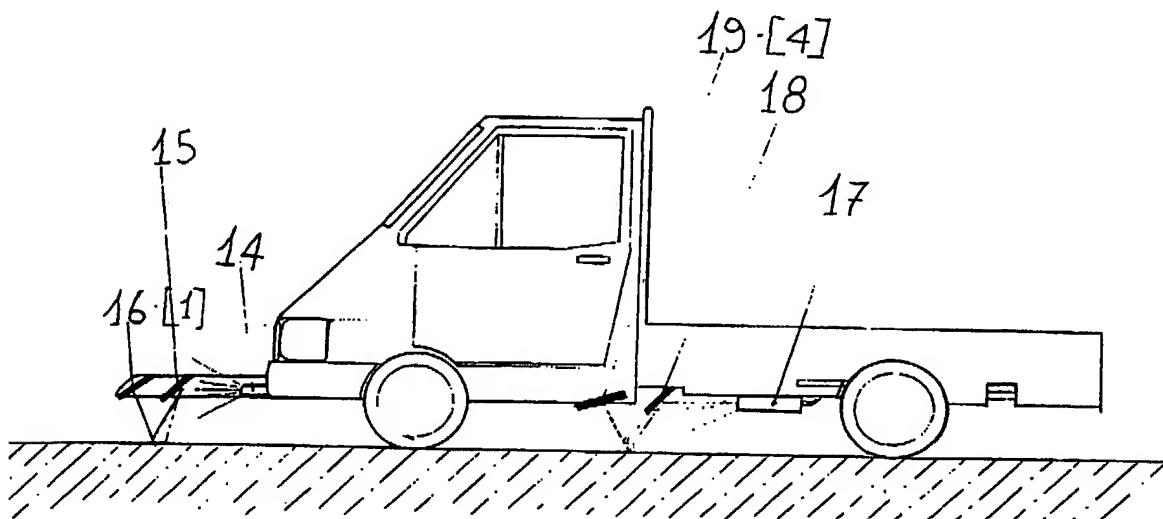


FIG. 2.

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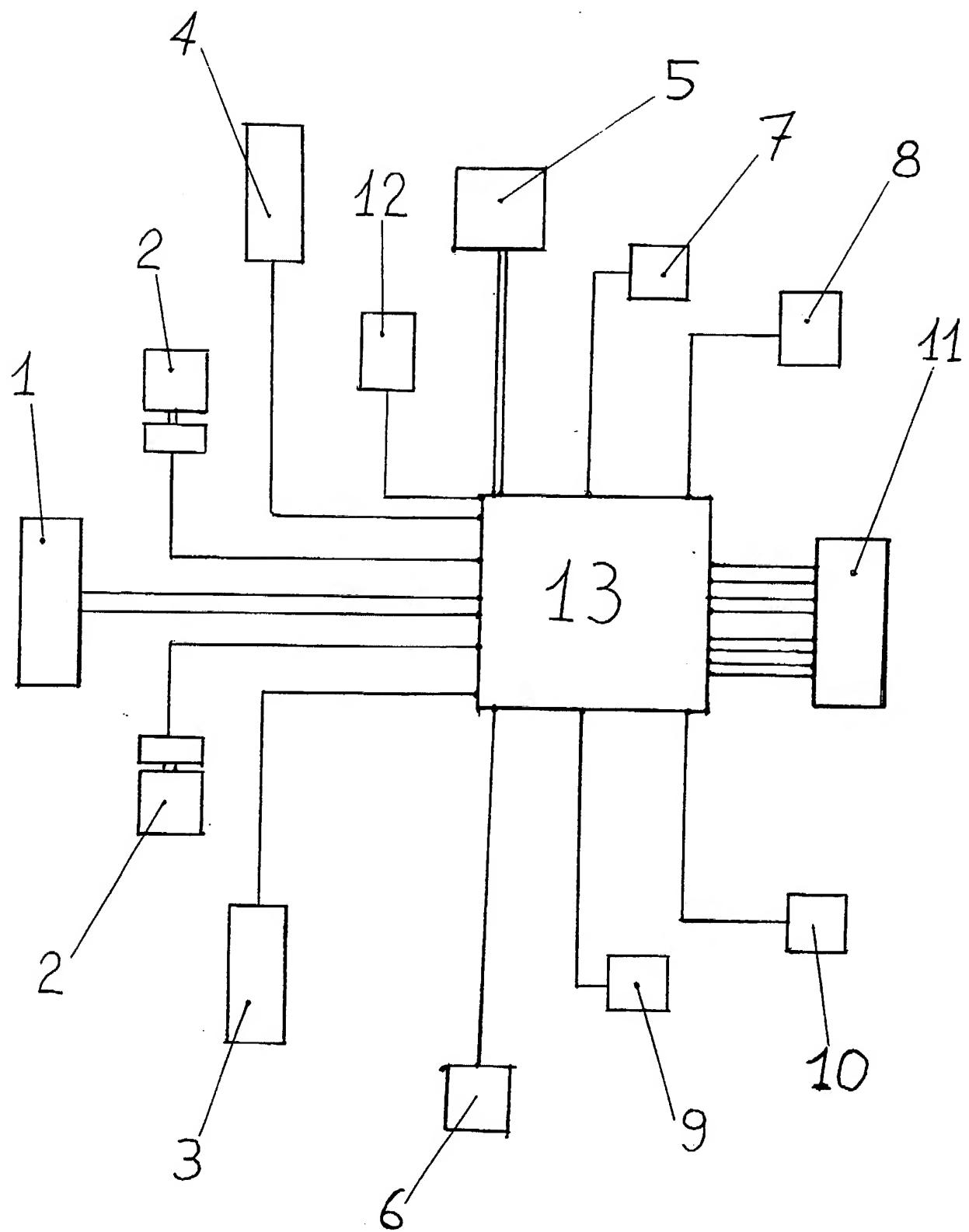


FIGURE 1

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19-[4]
18
17

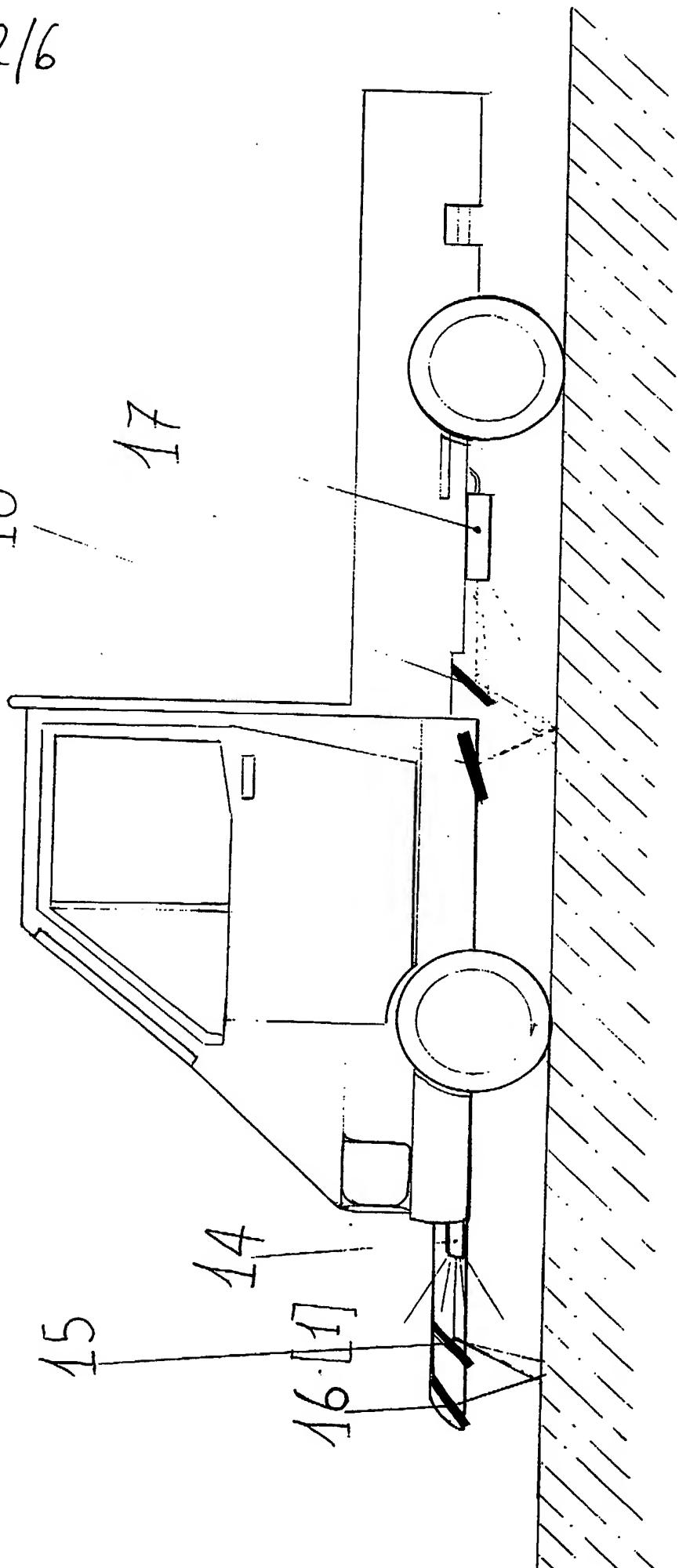
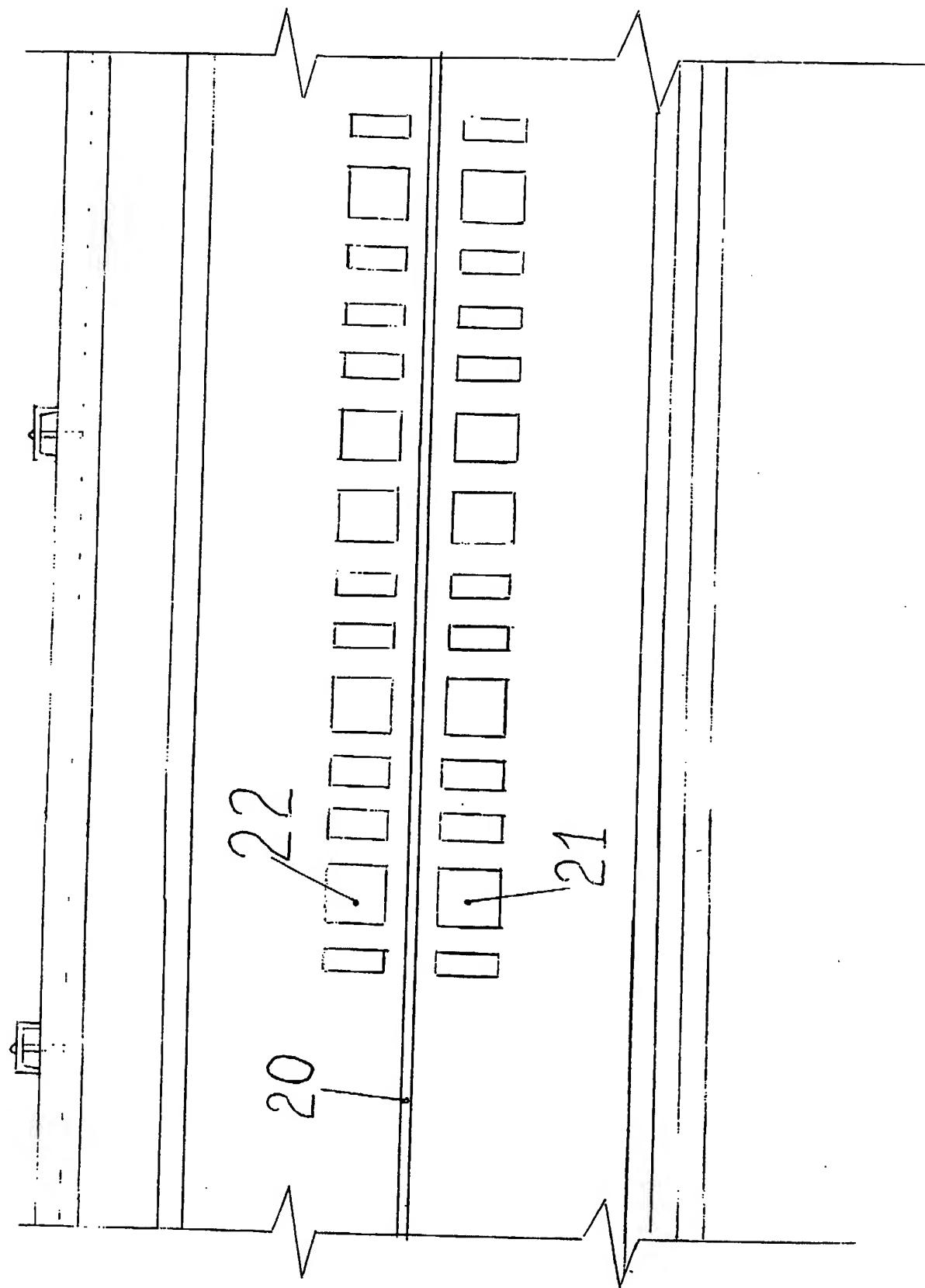


FIG. 2.

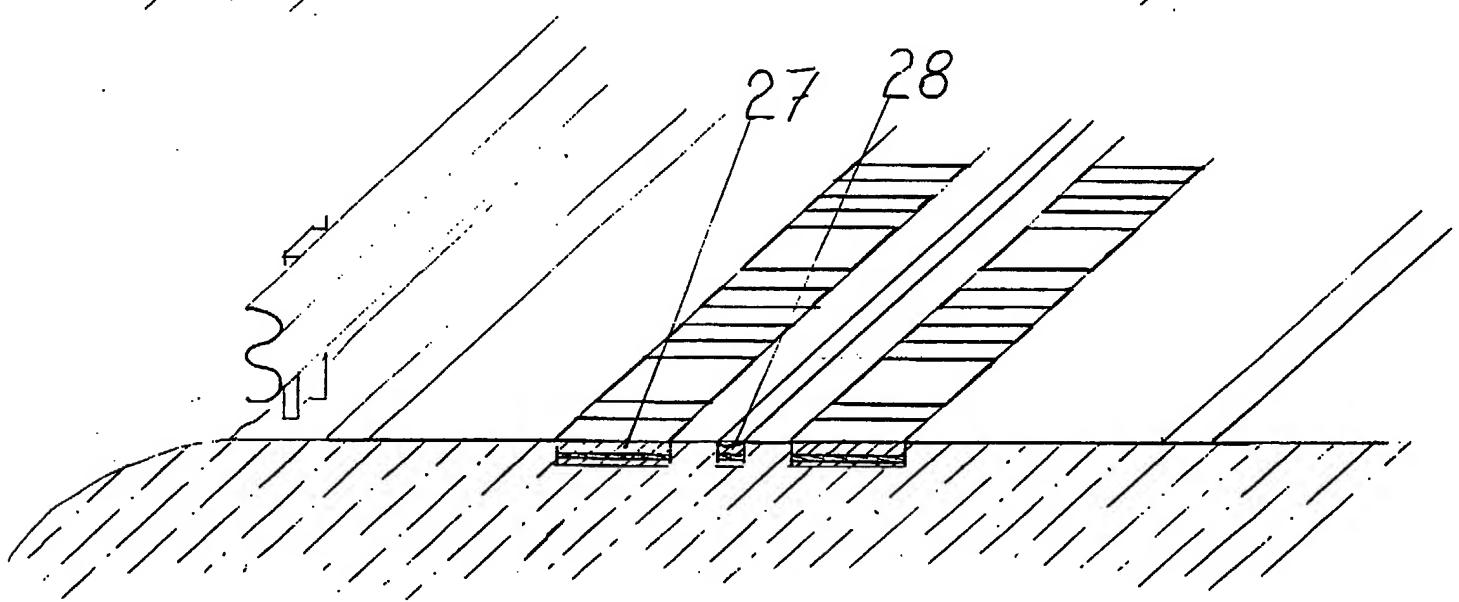
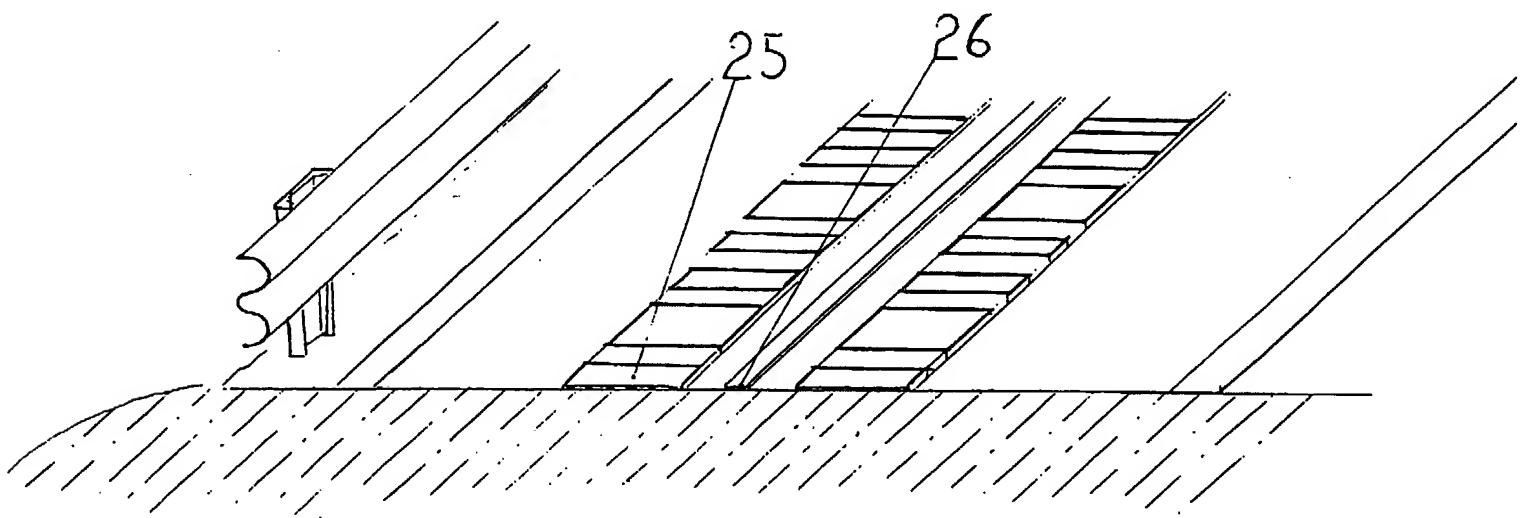
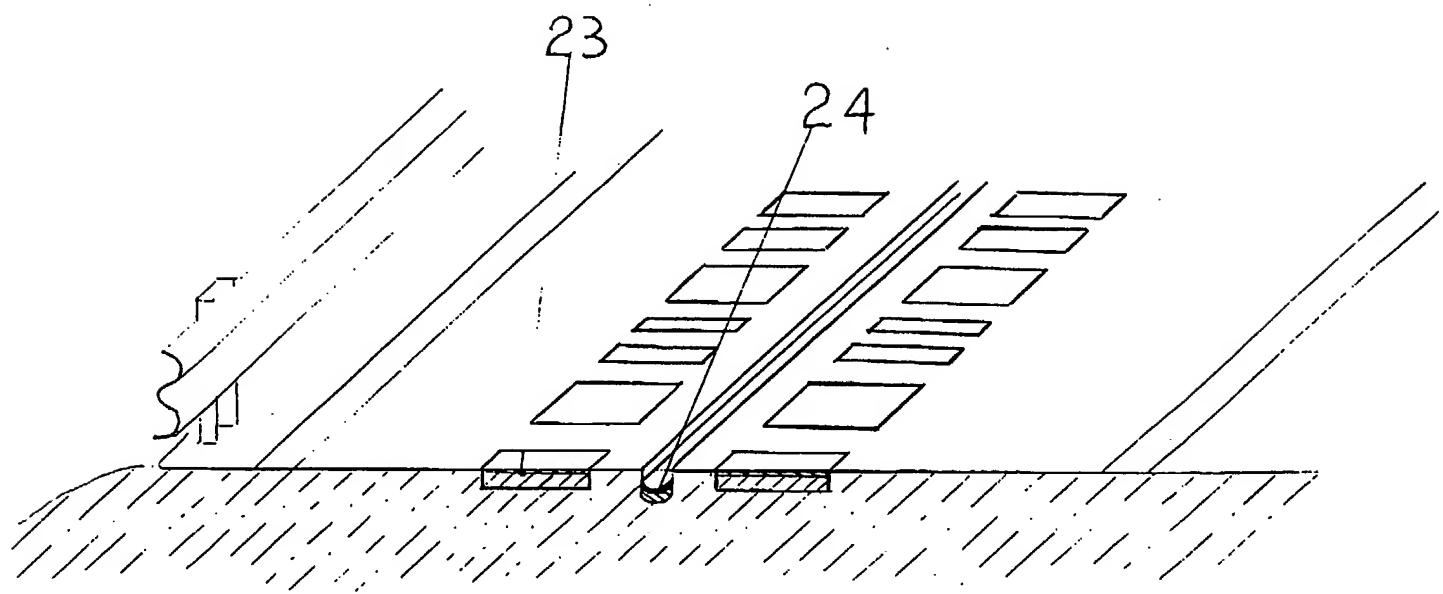
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FIG. 3.



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FIGURE 4



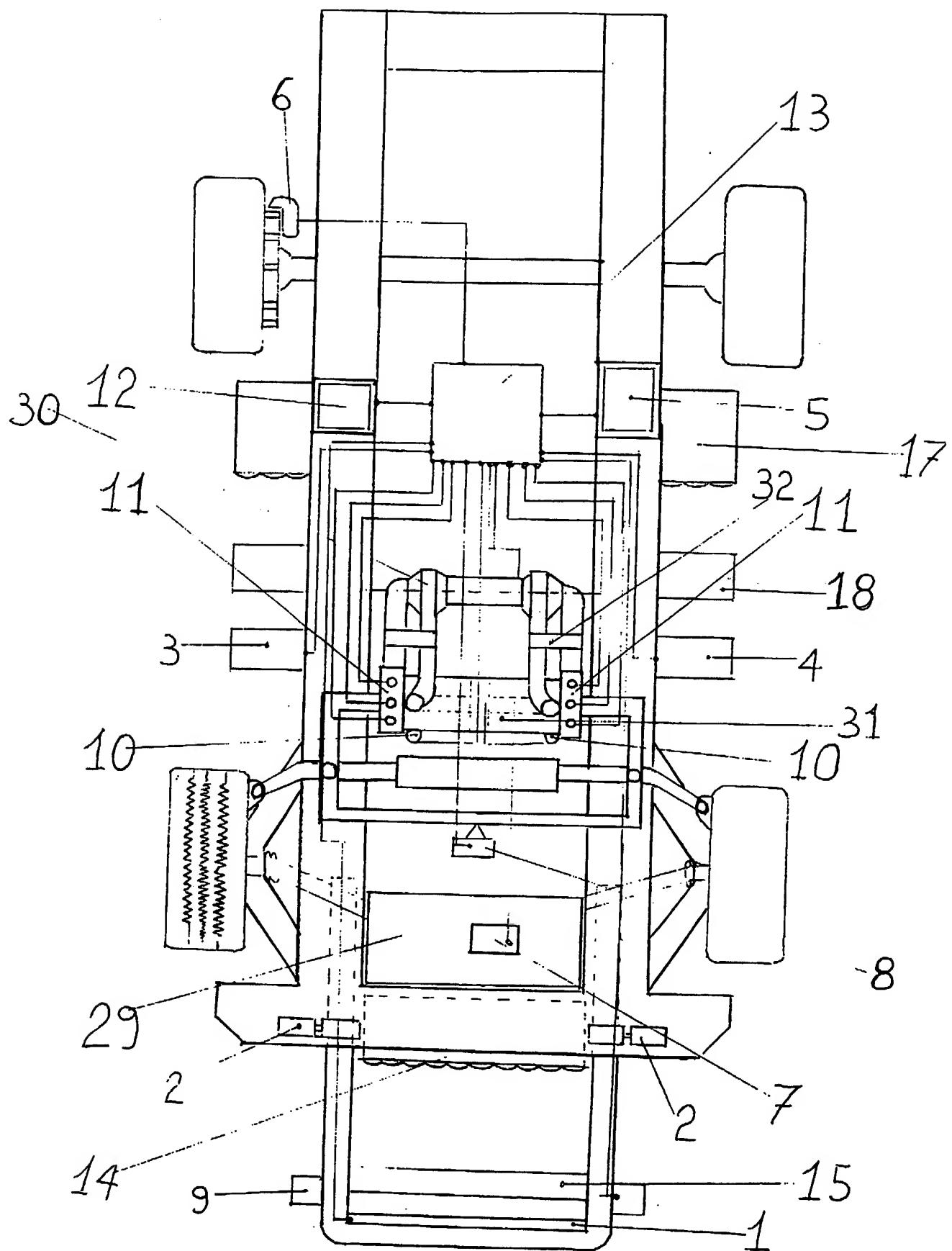
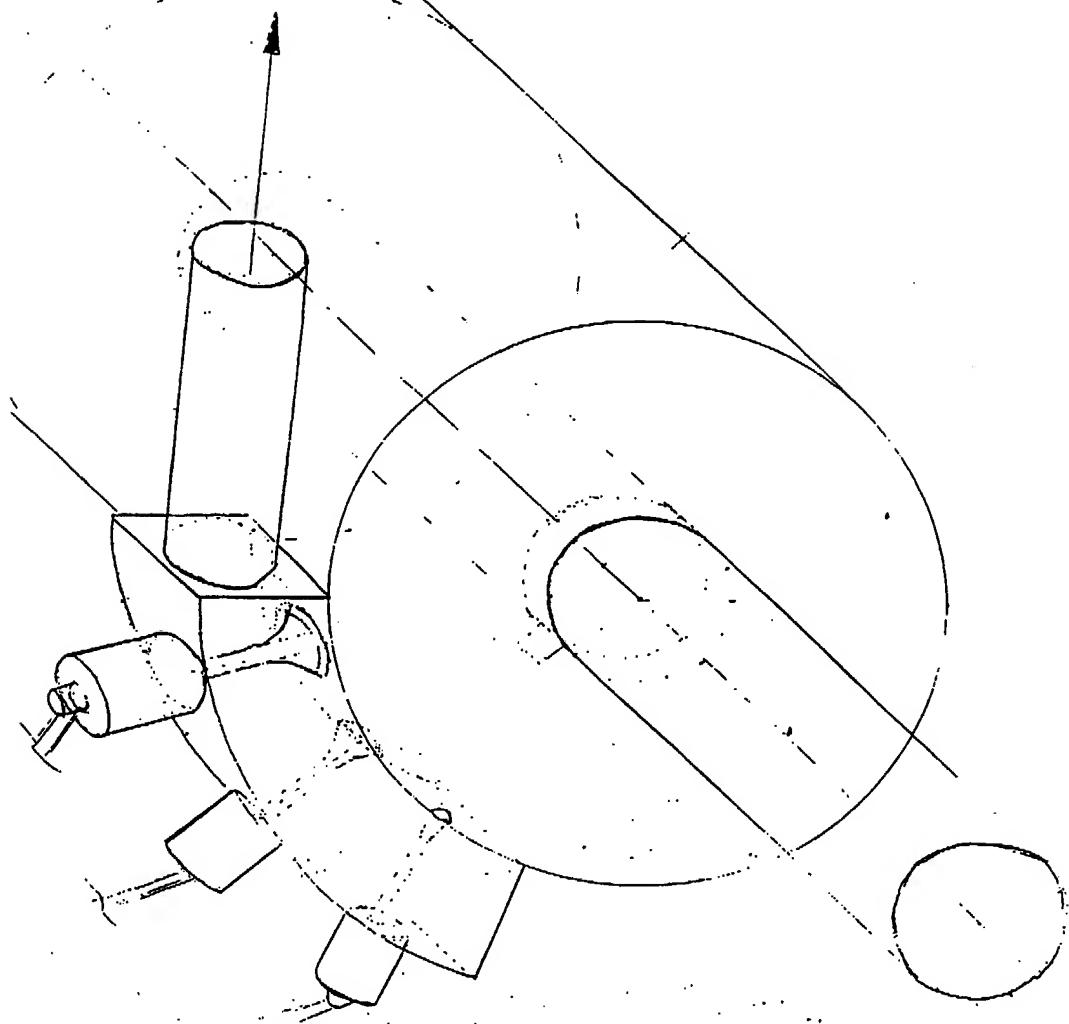


FIGURE 5

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FIG. 6.



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A.R.S.I.D.S.

The invention is related to cars, lorry, van and all other vehicles with four or more wheels that everyone can go on the road.

The main principle of this system is to read the necessary information for the automatic drive instructions from the road surface, like the name of the invention means.

A.R.S.I.D.S., automatic road surface information drive system, is an invention that want to reduce the human mind and body applications during the driving activity, like an automatic pilot that temporary replace the driver.

The system during the motion read the road surface and compares the information received with a computer program memorised

The system is a system that give the opportunity to be used or not related to the various events that a driver can finds on the road so the driver can in every moment came back to drive himself the vehicle.

Details of the various parts of the system are showed in the following drawings:

Figure number 1

This figure shows all the single device and components of the system

Figure number 2

This figure shows the external device fitted on a van

Figure number 3

This figure shows an example of the road surface

Figure number 4

This figure shows various methods to insert information on the road surface

Figure number 5

This figure shows an example of all the various parts of the system fitted on a van.

The figure number 1 is a scheme where are mentioned all the devices.

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The primary sensor (n 1) send to the central control unit (n 13) the data about the position of the central road trace (figure 3 number 20).

The secondary sensors (n3 and n4) read and sends to the central control unit (n13) the information that are on the road, similar a barcode that we can find on all the products ordinary sell out in the supermarkets.

The direction gyroscopic device (n5) sends to the central control unit (n13) the data about the direction of the vehicle that together to the velocity sensor (n10) permit to the central control unit (n13) to calculate the position of the vehicle on the way.

The central control unit (n 13), with the information received, Compute the right command to send to the principal devices that are:

The master drive cylinder valves (n11) and the velocity control device (n7).

All the others devices are control devices that permit to the central control unit (n13) to control the system operations. Bulbs and emergency switch are not showed in the figure.

The wheels angle position sensor (n8) control the wheels orientation during the way, the oil press ion sensor (n10) control the oil press ion in the master cylinder, the front distance vehicle sensor (n9) control the eventually obstacles in front of the vehicle during the way and the radio general alarm (n12) receive information from a external control authority.

The front sensor (n1) is fitted on a retractile frame in order to protect the front sensor (n1) when not used and it will be put in operation by two electric motor (n2).

The figure number 2 explains the functionality of the sensors. An emission of light (n14) reflected on the road from the mirror (n15) will be read from the photo-sensible plate that is the main sensor (n 16 or n1 in figure 1) and will give the information of the trace position.

In the same way the emission of the light (n17) reflected from a mirror (n18) on the road permit to the system to read from the photo-sensible plate the road information on the lateral traces.

The figure number four shows a tree example s of traces.

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The central trace could be built in metal (n24) with the upper surface in stainless steel or simply built in a reflecting tape attach on the road surface (n26) or a syntactic tape insert on the road surface with a mirror in the middle (n28).

The road information traces could be inserted in the road with a similar system using a metal tile with the upper surface in stainless steel (n23) or a reflecting tape attach on the road surface (n25) or a synthetic tape insert in the road with a mirror in the middle(n27).

The figure number 5 shows a scheme where the components explained in the figure number 1 and numbers 2 are fitted on a van frame.

The van showed in the figure has an engine fitted on the front side (n29).

An electric double oil pump (30), pumps oil in the two rooms of the master cylinder at a specific quantity and press ion regulated by two regulators(32).

The master hydraulic cylinder (n31) move the wheels on the right or on the left related to the commands give from the central control unit (n13) to the valves (n11) fitted on the master cylinder (n31)

When the central control unit (n13) want to move the wheels on the right side open the valves on the left side of the master cylinder (n31) and when the central control unit (n 13) want to move the wheels on the left side the central control unit (n13) open the valves on the right side of the master cylinder.

The electro valves are schematically showed in the figure number 6.

CLAIMS

1. A.R.S.I.D.S. is an automatic road surface drive system, reads information imprint on the road surface in order to calculate the necessary commands for the automatic drive.
2. A.R.S.I.D.S. as claimed in claim 1 where information imprint on the road surface means that the invention use a optical system to read from the road surface information for the drive instructions.
3. A.R.S.I.D.S. as claimed in claim 1 or claim 2 where road surface information means that on the road surface are inserted plates, tapes, tail or other kind of reflecting objects.
4. A.R.S.I.D.S. as claimed in the claim 1 where calculate means that the invention use a electronic computer system in order to calculate and decide the appropriate electrical command to send to the components employed for the vehicle direction control.
5. A.R.S.I.D.S. as claimed in the claim number 4 where components mean that the system use mechanical, hydraulic and or electrical device for the conversion of the electrical commands in mechanical movements necessary for the direction control of the vehicle.
6. A.R.S.I.D.S. as claimed in claim number 1 where automatic drive means that the human actions employed in the drive of the vehicle is totally or partially absent.
7. A.R.S.I.D.S. substantially as described here in with the reference figure 1,2,3,4,5,6 of the accompanying drawings.



INVESTOR IN PEOPLE

Application No: GB 0109417.6
Claims searched: 1-7

Examiner: Peter Mason
Date of search: 11 January 2002

Patents Act 1977

Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.T): G3N: NGBXA, NGBXC, NGF1B, NGF1
G3R: RBD32
G4Q: QAJ, QAF, QCE, QCK

Int Cl (Ed.7): G05D: 1/03
G08G: 1/0967, 1/0968

Other: Online: EPODOC, JAPIO, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 1,571,559	(AB VOLVO) See whole document especially page 1, lines 11- 62	1,3-6
X	EP 0 290 634 A1	(CARL SCHENCK AG) See EPODOC & WPI Abstracts	1-6
X	EP 1 074 904 A1	(NISSAN MOTOR COMPANY LTD) See whole document especially paragraphs [0006] and [0007]	1-6
X	US 6,081,187	(TOYOTA JIDOSHA KK) See whole document especially figs. 2 and 9A-9E, and column 1, line 9 - column 2, line 49	1,3-6
X	US 5,318,143	(THE TEXAS A & M UNIVERSITY SYSTEM) See Whole document especially fig. 1, and column 1, lines 10-63	1-6

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.



Application No: GB 0109417.6
Claims searched: 1-7

Examiner: Peter Mason
Date of search: 11 January 2002

Category	Identity of document and relevant passage	Relevant to claims
A	FR 2,759,647 A (PECQUET DOMINIQUE) See EPODOC & WPI Abstracts	-
X	JP 59 032,009 A (MITSUBISHI HEAVY IND LTD) See EPODOC & PAJ Abstracts	1-6
A	DE 100 12 761 A1 (HONDA MOTOR CO LTD) See EPODOC & WPI Abstracts	-
X	DE 40 23 952 A1 (BAYERISCHE MOTOREN WERKE AG) See EPODOC & WPI Abstracts	1,3-6

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Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.